How to do a problem set outline
Math 142

This handout is meant to give a better idea of what a problem set outline is.

Definitions. Here you should copy the following definitions from Sections 1.1–1.3.

1.1: Graph, edges, vertices. Adjacent. Directed edges, directed graph. Path, circuit, connected. Bipartite. Tree. Degree (of a vertex). Edge cover. Independent set. Interval graph. Vertex basis.

1.2: Isomorphic, isomorphism. Subgraph. Complete graph on n vertices. Isolated vertices. Complement. In-degree, out-degree.

1.3: Components (of a graph). Length (of a circuit or path).

Problem plans. Here are some sample problem plans for PS01.

(1.1) 22.

Goal: Find the minimum number of independent sets required to cover all vertices, with explanation.

Method: Trial and error; once answer is found, need to justify that it can't be done with fewer independent sets.

(1.2) 8.

Goal: Find which pairs of graphs are isomorphic, with explanation.

Method: Trial and error. For isomorphic pairs, write down the one-to-one correspondence between vertices; for non-isomorphic graphs, explain why they are not isomorphic.